

"Infants held skin to skin six hours a day the first week and two hours a day the second through fourth week appear to be socially bidding to Mom at the age of three months in contrast to the age of seven months when social bidding has been recorded in previous studies."

Effects of Skin-to-Skin Contact on Early Mother-Infant Interaction: Preliminary Findings from a Canadian Sample of Full-Term Infants

Ann Bigelow, St. Francis Xavier University, Antigonish, Nova Scotia, Canada

Co-Investigators: Judith Cormier, Kim MacLean, Ann Marie Murdock, Clare Fawcett, Doris Gillis, Marion Alex, Sherry Bowman, Penny Fuller, Terry Penny, Magdy Fouad, Janis MacLellan-Peters
Research Assistants: Michelle Power, Shim Pang, Claudette McDonald, Gerry Cameron, Jan Hanifen, Rachel MacFarlane, Mena Enxuga, Yvonne MacDonald, Cynthia Flanagan, Jennifer Delaney, Laura Walden
Consultants: Gene Anderson, Nils Bergman, Susan Ludington

This report examines the preliminary results of an ongoing study on the effects of early mother-infant skin-to-skin contact on infants' response to the Still Face Task at 1 week, 1 month, 2 months, and 3 months of age. Mothers in the Skin-to-Skin group were requested to provide skin-to-skin contact with their infants until the infants were one month of age; mothers in the Control group were not requested to provide skin-to-skin contact. The data from the Still Face Task are part of a larger study examining the effects of mother-infant skin-to-skin contact on the mother-infant relationship over the infants' first three months of life.

The Still Face Task is used to assess infants' ability to engage in face-to-face social interaction, to notice when an interruption occurs in the interaction, and to reengage after the interruption. Previous studies report infants to be responsive to the Still Face Task by 2 to 3 months of age; the youngest infants previously reported to have been given the Still Face Task were 1 month of age. Early mother-infant skin-to-skin contact is predicted to enhance infants' sensitivity to mother and, therefore, to facilitate infants' responsiveness to mother in the Still Face Task.

Method

Participants were 54 mothers and their full-term infants. Approximately half were in the Skin-to-Skin group and half were in the Control group. Participating mothers were assigned to the groups based on the hospital in which their infants were born. Hospitals designated to the Skin-to-Skin and Control groups were switched half way through the study.

Mothers in the Skin-to-Skin group were requested to provide skin-to-skin contact with their infants for 6 hours per day for the infants' first week of life and then 2 hours per day until the infants were 1 month. No request to provide skin-to-skin contact was made to the mothers in the Control group. Table 1 shows the means and standard deviations of the daily mother-infant skin-to-skin contact for the Skin-to-Skin and Control groups in infants' first week and in their second through fourth weeks. The data were taken from daily records kept by the mothers.

Table 1

Mean Hours per Day of Mother-Infant Skin-to-Skin Contact for the Skin-to-Skin and Control Groups during the Infants' First Week of Life and during Weeks 2 through 4.

Group	Infant Age	
	week 1	weeks 2 through 4
Skin-to-Skin	5.52 (1.27)	2.48 (1.10)
Control	0.53 (0.66)	0.23 (0.53)

Note. Standard deviations are in parentheses.

The Still Face Task was conducted during home visits when infants were 1 week, 1 month, 2 months, and 3 months of age. During the Still Face Task, the mother sat in a chair and the infant sat in a baby seat positioned so the mother and infant were facing each other at eye level. The Still Face Task consisted of three consecutive phases of mother-infant face-to-face interaction.

1. Initial interactive phase (3 minutes): Mother socially engages the infant.
2. Still face phase (1 minute): Mother becomes still, looking at the infant with a neutral expression, and does not talk or touch the infant.
3. Reunion phase (2 minutes): Mother resumes social engagement with the infant.

The infants' smiles, grimaces, positive vocalizations, and negative vocalizations were scored from videotapes of the task. These duration measures were converted to percent of time in each phase. Infants demonstrate the still face effect by showing positive affect (and/or low negative affect) to the initial interaction phase, reduced positive affect (and/or increased negative affect) to the still face phase, and then increased positive affect (and/or reduced negative affect) to the reunion phase.

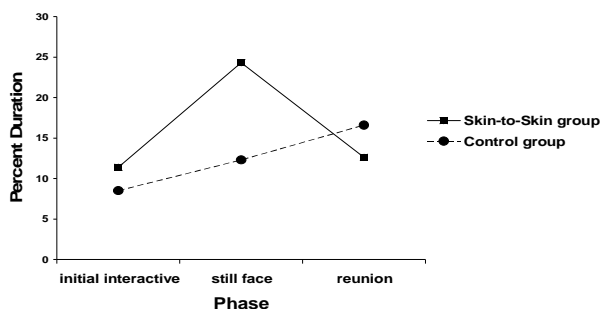
Results

Analyses of variance with the variables phase (initial interactive, still face, reunion) and group (Skin-to-Skin, Control) were conducted on the data for infants' smiles, grimaces, positive vocalizations, and negative vocalizations. Only the data with at least marginal statistical significance are reported.

1 week

Figure 1 (Grimaces) indicates that infants in the Skin-to-Skin group showed evidence of the still face effect by their negative affect (phase x group, $p = .10$). Their grimaces increased in the still face phase from the initial interactive phase and decreased again in the reunion phase, whereas the infants in the Control group simply increased their grimaces across the three phases.

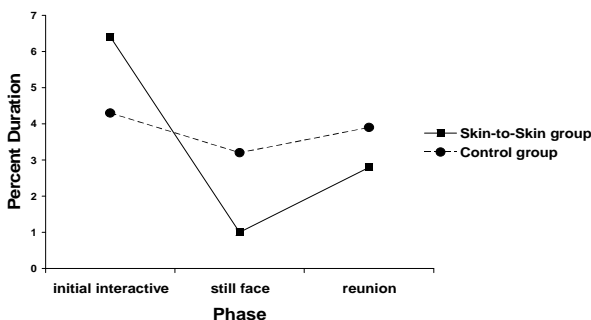
Figure 1: Grimaces at 1 week



1 month

Figure 2 (Positive Vocalizations) indicates that infants in the Skin-to-Skin group showed evidence of the still face effect by their positive affect (phase x group, $p < .10$). Their positive vocalizations decreased in the still face phase from the initial interactive phase and then increased again in the reunion phase, whereas the positive vocalizations of the Control group were just beginning to hint at such a pattern.

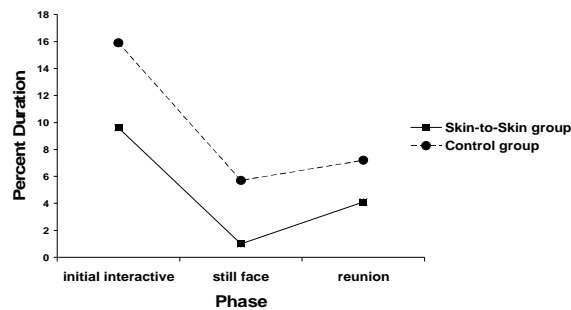
Figure 2: Positive Vocalizations at 1 month



2 months

Figure 3 (Smiles) indicates that both groups showed the still face effect by their positive affect (phase, $p < .001$).

Figure 3: Smiles at 2 months



3 months

Figure 4 (Smiles) indicates that both groups continued to show the still face effect by their positive affect (phase, $p < .001$). Moreover, Figure 5 (Positive Vocalizations) indicates that the Skin-to-Skin group showed an interesting new development of increased positive vocalizations during the still face phase. An analysis of variance on the number of infants who showed this development found that more infants in the Skin-to-Skin group than in the Control group increased their positive vocalizations in the still face phase relative to the other two phases ($p < .10$). In the literature such an increase is seen as an indication of social bidding; the infants are actively trying to reengage the mother during the still face phase by playfully calling to her -- except that in the literature such social bidding is not seen until infants are 7 months old!

Figure 4: Smiles at 3 months

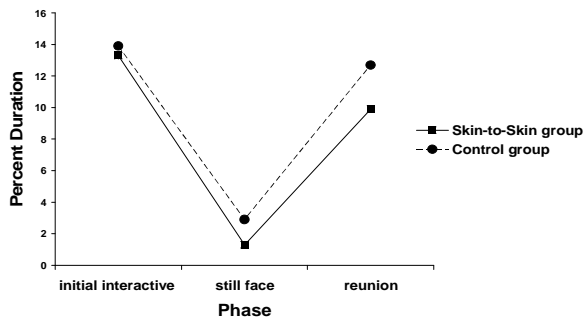
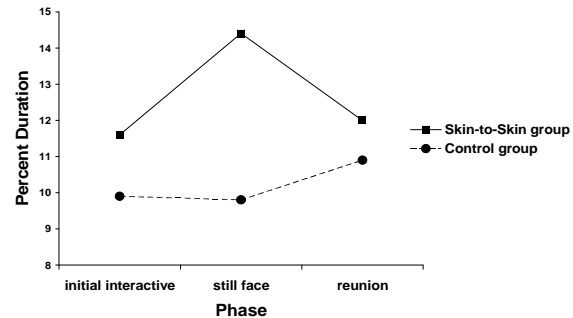


Figure 5: Positive Vocalizations at 3 months



Conclusions

The trends suggest that early mother-infant skin-to-skin contact facilitates infants' response to maternal social overtures. In particular, such contact enhances infants' ability to reengage with their mothers. By 3 months of age, infants with early skin-to-skin contact appear to take an active role in initiating reengagement. These trends are occurring at ages younger than ever previously reported. The early responsiveness of the infants in the Skin-to-Skin group to maternal social encounters suggests that skin-to-skin contact enhances infants' sensitivity to mother and accelerates knowledge about, and expectations for, her behavior.

Paper presented at the Sixth Biennial International Workshop of the International Network of Kangaroo Mother Care in Cleveland, Ohio, October 2006. The research was supported by a grant from the Nova Scotia Health Research Foundation.